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without any chance of stimulus by personal contact with investigators and so allow their interest to die.

It is becoming more and more certain that amongst other bad features of our "educational system" there is a growing tendency to formation of caste distinctions. The high-school teacher to some extent assumes an exclusive air toward the grade teacher, the university teacher toward the high-school teacher. Within the universities teachers without doctor's degrees sometimes find an embarrassing attitude among their own fellows. A newly fledged doctor sometimes considers himself superior to an older man with a lower degree.

If the universities can not possibly grant higher degrees for extramural work, no matter how valuable, may it not be possible to devise a method by which recognition and encouragement may be given to those doing effective research not technically recognizable under university rules. Could a national council be assembled to confer some mark of merit upon such people? Could a society somewhat like Sigma Xi be formed for such a purpose? If something could be done and a high but reasonable standard maintained, a man with such recognition might stand as high or even higher amongst scientists than the mere doctor. For is not achievement in the face of adversity of greater value than achievement with every facility granted? Is not the man who can do much with little better than the man who must have much in order to do at all?

I am perfectly aware that the easy-chair type of university man will sneer at such a proposal, but I feel sure that there is truth in my contention. I know some one will say that proper research can not be done with poor equipment. Much of the finest research ever done in any and every line has been done with poor equipment and such things might happen again. The man with poor equipment sometimes makes up in resourcefulness for far more than the fine equipment that another may have. Then too there are many problems yet to be solved which do not demand expensive or elaborate equipment.

I also anticipate the objection that standards would be hard to fix or sustain for such recognition as I have suggested. The results could scarcely be worse than they are for the doctor's degree. I know one state superintendent of public instruction who flourishes a Ph.D. without ever doing any graduate work. In another case a man boasts of the way in which he manipulated credits through two of our best known universities so as to get the degree in two years. In two cases I have heard about the thesis for the degree was repudiated by the department in which the work was done almost as soon as published. A national council would certainly do no worse than this.

So far as I am personally concerned I am determined to go on with such research as I can whether I get any sort of recognition or not, but my own situation has made me think deeply on the matter and I have finally concluded that something could be done to at least encourage isolated workers if scientific leaders cared to do so.

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SCIENCE IN THE SERVICE OF THE NATION

THE suggestion contained in *The Scientific Monthly* for September, 1916 (p. 310), that the National Research Council's proposal to help "render the United States independent of foreign sources of supply liable to be affected by war," but failure to propose anything looking toward the cooperation of our nation with other nations in producing supplies, might not meet the approval of all scientific men, is well taken.

That science is in for a period of criticism, even condemnation, because of the part it is playing in the modern war game is indicated by mutterings to this effect heard in diverse quarters. How is the charge to be met?

The mere pointing to what science can do through medicine and other instrumentalities to relieve somewhat the horrors and destruction of war, is clearly not enough. Something more than repair work is needed.

So universal and impersonal are the principles and methods with which science works,

and so fundamental to it are correlation and cooperation, it does seem that among its proposals of service the National Academy of Sciences might include something looking toward the improvement of international relations.

For instance, has science nothing to contribute to the supreme international problem of the day, that of the use of the high seas? And can science suggest no way of utilizing its riches of anthropological and psychological knowledge through governmental channels to help toward a better understanding among peoples of different nations and races?

Lack of sympathetic knowledge on the part of citizens of one country about those of other countries is undoubtedly one of the fertile sources of international friction and hatred; and since a nation must have a large measure of responsibility for its nationals while sojourning in foreign lands, it seems only reasonable that it should make some effort to prevent its citizens, especially those engaged in international trade, from needlessly imperiling its good relationships with other nations.

Since such knowledge is so largely involved in ethical science which in turn is inseparable from physical and cultural anthropology and comparative psychology, it would seem eminently proper that a National Research Council created at the request of the President of the United States falls short of recognizing its full possibilities if it has nothing to propose touching these vital aspects of the national life.

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THE SCRIPPS INSTITUTION FOR
BIOLOGICAL RESEARCH OF THE
UNIVERSITY OF CALIFORNIA,
September 22, 1916

QUOTATIONS

SCIENCE AND INDUSTRY

ON July 28, 1915, an Order in Council constituted two new bodies—a "Committee of the Privy Council for Scientific and Industrial Research," of which Lord Crewe (as Lord President) is chairman, and an advisory council, consisting of eight very eminent men of

science under the chairmanship of Sir William McCormick. The first annual report of each of these bodies is now published, and that of the latter, signed by Sir William McCormick, is a document of considerable length and importance. He and his scientific colleagues have made a serious attempt to gauge the extent of our deficiency, both in the volume of scientific research which is being conducted in this country and in its correlation to the needs of industry. In reviewing the question they recognize that the distinction between "pure" and "applied" science is, in a sense, a false one. They point out that all the important advances which recent generations have made in industrial science, from wireless telegraphy to synthetic indigo, have been the direct outcome of discoveries made by "pure" science conducting research solely for its own sake. At the same time they have temporarily concentrated their first attention upon "research of directly industrial application," both for reasons of industrial urgency and because the universities, which are the natural homes of research in pure science, have been so depleted both of students and of teachers by the war, that "they are barely able to continue their routine work, and can command at the moment neither the leisure nor the detachment of spirit that are essential conditions of original research."

Within this narrower field their first step was to save from actual or imminent abandonment a number of researches which were being conducted or directed by professional associations in the period preceding the war. These have been kept going by a series of government grants, and in one case by getting the War Office to release the investigator from military duties. The next step was to hold conferences with the various professional societies and trade associations. These showed that in the main it is the most highly organized industries that have made most use of scientific research, and are therefore most ready for, though perhaps not most in need of, encouragement to make more. Thus "the engineering trades, with their attendant group of distinguished professional societies, have